

IN THE CLAIMS

1-15 (canceled)

16. (currently amended) A thermoplastic polymeric material having high IR absorption comprising at least one inorganic metal phosphate of the general formula $\text{Me}_x(\text{PO}_4)_y(\text{OH})_z$, wherein Me consists of one or more elements from the group Cu, Fe, Mn, Sb, Zn, Ti, Ni, Co, V, Mg, Bi, Be, Al, Ce, Ba, Sr, Na, K, Ge, Ga, Ca, Cr, In or Sn, wherein the inorganic metal phosphate optionally contains contain a water of crystallization, wherein x and y are whole numbers; and

x is from 1 to 18;

y is from 1 to 12; and

z is from 0.2 to 10, wherein if the inorganic metal phosphate is $\text{Ca}_3(\text{PO}_4)_2\text{Ca}(\text{OH})_2$ it contains contain a water of crystallization; wherein the thermoplastic material has a high infrared absorption such that the transparency in the visible wavelength range of from 400 to 700 nm is not significantly impaired and the absorption in the wavelength range of from 700 to 1500 nm is significantly higher than in the visible range.

17. (currently amended) The thermoplastic polymeric material according to claim 16, comprising a plastic one or more plastic selected from the group consisting of a polyester, a polyalkylene, a vinyl polymer, a polyamide, a polyacetal, a polyacrylate, a polycarbonate, a polystyrene, a polyurethane, a acrylonitrile-butadiene-styrene copolymer, an halogenated polyalkylene, a polyarylene oxide and a polyarylene sulfide polyesters, poly alkylenes, vinyl polymers, polyamides, polyacetals, polyacrylates, polycarbonates, polystyrenes, polyurethanes, acrylonitrile-butadiene-styrene copolymers (ABS), halogenated polyalkylenes, polyarylene oxides and polyarylene sulfides.

18. (currently amended) The thermoplastic polymeric material according to claim 17, wherein said plastic is selected from the group consisting of polyethylene-terephthalate (PET), polytrimethylene terephthalate (PTT), polybutylene-terephthalate (PBT), polyethylene naphthalate (PEN), polyethylene (PE), Poly-propylene (PP), polyvinyl chloride (PVC) and polymethyl methacrylate (PMMA).

19. (previously presented)The thermoplastic polymeric material according to claim 16, wherein

x is from 1 to 5;

y is from 1 to 4; and

z is from 0.2 to 5.

20. (previously presented)The thermoplastic polymeric material according to claim 16, wherein said inorganic metal phosphate is selected from the group consisting of Cu₂PO₄OH, Cu₃(PO₄)(OH)₃, Cu₃(PO₄)(OH)₃, Cu₅(PO₄)₂(OH)₄, CuFe₂(PO₄)₂(OH)₂, (Cu,Zn)₂ZnPO₄(OH)₃·2(H₂O), (Cu,Zn)₅Zn(PO₄)₂(OH)₆·(H₂O), Cu₃Al₄(PO₄)₃(OH)₉·4(H₂O), CuAl₃(PO₄)₄(OH)₃·4(H₂O), (Zn,Cu)Al₆(PO₄)₄(OH)₈·4(H₂O), CuFe₆(PO₄)₄(OH)₈·4(H₂O), CaCu₆[(PO₄)₂(PO₃OH)(OH)₆]·3(H₂O) and Cu₂Mg₂(PO₄)₂(OH)₂·5(H₂O).

21. (previously presented)The thermoplastic polymeric material according to claim 16, wherein the amount of inorganic metal phosphates added is from 0.0002 to 2 wt.%, expressed in terms of the final thermoplastic polymeric material.

22. (previously presented)The thermoplastic polymeric material according to claim 16, wherein the amount of inorganic metal phosphates added is from 0.001 to 0.1 wt.%, expressed in terms of the final thermoplastic polymeric material.

23. (previously presented)The thermoplastic polymeric material according to claim 16, wherein the inorganic metal phosphate has Scherrer crystallite sizes of from 0.005 to 5 µm.
24. (previously presented)The thermoplastic polymeric material according to claim 16, wherein the inorganic metal phosphate has Scherrer crystallite sizes of from 0.001 to 2 µm.
25. (previously presented)A method for the preparation of thermoplastic polymeric materials with high IR absorption, containing at least one inorganic metal phosphate of the formula $M_x(PO_4)_y(OH)_z$, which may optionally contain a water of crystallization wherein a solution of the relevant metal ion, or the relevant metal ions, and a solution of the relevant PO_4 component in an aqueous medium are precipitated, the product obtained is dried and incorporated into a thermoplastic polymeric material, wherein if the inorganic metal phosphate is $Ca_3(PO_4)_2Ca(OH)_2$ it contains a water of crystallization.
26. (previously presented)A method according to claim 25, wherein corresponding solutions of the sulfates, chlorides, nitrates, hydroxides or oxides are used as the metal ion solution.
27. (previously presented)A method according to claim 25, wherein phosphoric acid or solutions of its soluble salts are used as the solution for the PO_4 component.
28. (previously presented)A method according to claim 25, wherein the precipitation products are hydrothermally treated and/or heat treated in the dry state in order to form the desired metal phosphate.
29. (previously presented)A method comprising softening a thermoplastic polymeric material according to claim 16 by heating with IR radiation and subsequently subjected to further processing to shape them.
30. (previously presented)A method of producing a preform comprising a thermoplastic polymeric material of claim 16 by heating with IR radiation and subsequently processing to form a consumer article and packaging.

31. (new) A thermoplastic polymeric material comprising at least one inorganic metal phosphate of the formula $Mex(PO_4)_y(OH)_z$, wherein Me consists of one or more elements from the group Cu, Fe, Mn, Sb, Zn, Ti, Ni, Co, V, Mg, Bi, Be, Al, Ce, Ba, Sr, Na, K, Ge, Ga, Ca, Cr, In or Sn, wherein the inorganic metal phosphate optionally contains a water of crystallization, wherein x and y are whole numbers; and

x is from 1 to 18;

y is from 1 to 12; and

z is from 0.2 to 10, wherein if the inorganic metal phosphate is $Ca_3(PO_4)_2Ca(OH)_2$ it contains a water of crystallization, wherein said inorganic metal phosphate is selected from the group consisting of:

$Cu_3(PO_4)(OH)_3$;

$Cu_3(PO_4)(OH)_3$;

$Cu_5(PO_4)_2(OH)_4$;

$CuFe_2(PO_4)_2(OH)_2$;

$(Cu,Zn)_2ZnPO_4(OH)_3 \cdot 2(H_2O)$;

$(Cu,Zn)_5Zn(PO_4)_2(OH)_6 \cdot (H_2O)$;

$Cu_3Al_4(PO_4)_3(OH)_9 \cdot 4(H_2O)$;

$CuAl_3(PO_4)_4(OH)_3 \cdot 4(H_2O)$;

$(Zn,Cu)Al_6(PO_4)_4(OH)_8 \cdot 4(H_2O)$;

$CuFe_6(PO_4)_4(OH)_8 \cdot 4(H_2O)$;

$CaCu_6[(PO_4)_2(PO_3OH)(OH)_6] \cdot 3(H_2O)$; and

$Cu_2Mg_2(PO_4)_2(OH)_2 \cdot 5(H_2O)$.

32. (new) The thermoplastic polymeric material according to claim 31, comprising one or more plastics selected from the group consisting of a polyester, a polyalkylene, a vinyl polymer,

a polyamide, a polyacetal, a polyacrylate, a polycarbonate, a polystyrene, a polyurethane, an acrylonitrile-butadiene-styrene copolymer, an halogenated polyalkylene, a polyarylene oxide and a polyarylene sulfide.

33. (new) The thermoplastic polymeric material according to claim 32, wherein said plastic is selected from the group consisting of polyethylene-terephthalate, polytrimethylene terephthalate, polybutylene-terephthalate, polyethylene naphthalate, polyethylene, polypropylene, polyvinyl chloride and polymethyl methacrylate.

34. (new) The thermoplastic polymeric material according to claim 32, wherein

x is from 1 to 5;

y is from 1 to 4; and

z is from 0.2 to 5.

35. (new) The thermoplastic polymeric material according to claim 31, wherein said inorganic metal phosphate is selected from the group consisting of $\text{Cu}_3(\text{PO}_4)(\text{OH})_3$, $\text{Cu}_5(\text{PO}_4)_2(\text{OH})_4$, $\text{CuFe}_2(\text{PO}_4)_2(\text{OH})_2$, $(\text{Cu}, \text{Zn})_2\text{ZnPO}_4(\text{OH})_3 \cdot 2(\text{H}_2\text{O})$, $(\text{Cu}, \text{Zn})_5\text{Zn}(\text{PO}_4)_2(\text{OH})_6 \cdot (\text{H}_2\text{O})$, $\text{Cu}_3\text{Al}_4(\text{PO}_4)_3(\text{OH})_9 \cdot 4(\text{H}_2\text{O})$, $\text{CuAl}_3(\text{PO}_4)_4(\text{OH})_3 \cdot 4(\text{H}_2\text{O})$, $(\text{Zn}, \text{Cu})\text{Al}_6(\text{PO}_4)_4(\text{OH})_8 \cdot 4(\text{H}_2\text{O})$, $\text{CuFe}_6(\text{PO}_4)_4(\text{OH})_8 \cdot 4(\text{H}_2\text{O})$, $\text{CaCu}_6[(\text{PO}_4)_2(\text{PO}_3\text{OH})(\text{OH})_6] \cdot 3(\text{H}_2\text{O})$ and $\text{Cu}_2\text{Mg}_2(\text{PO}_4)_2(\text{OH})_2 \cdot 5(\text{H}_2\text{O})$.

36. (new) The thermoplastic polymeric material according to claim 31, wherein the amount of inorganic metal phosphates added is from 0.0002 to 2 wt.%, expressed in terms of the final thermoplastic polymeric material.

37. (new) The thermoplastic polymeric material according to claim 31, wherein the amount of inorganic metal phosphates added is from 0.001 to 0.1 wt.%, expressed in terms of the final thermoplastic polymeric material.
38. (new) The thermoplastic polymeric material according to claim 31, wherein the inorganic metal phosphate has Scherrer crystallite sizes of from 0.005 to 5 μm .
39. (new) The thermoplastic polymeric material according to claim 31, wherein the inorganic metal phosphate has Scherrer crystallite sizes of from 0.001 to 2 μm .
40. (new) The thermoplastic polymeric material according to claim 31, wherein the thermoplastic material has a high infrared absorption such that the transparency in the visible wavelength range of from 400 to 700 nm is not significantly impaired and the absorption in the wavelength range of from 700 to 1500 nm is significantly higher than in the visible range.